hosts to the many students and visitors who passed through the lab, and his administrative assistant of many years, Mary Hilda Counselman, personally took care of generations of students as we arrived. In my case, she helped me move out of a hotel in an unsavory section of town to better accommodations and later lent her own furniture to me and my wife until ours finally arrived by moving van. It was a special treat and an honor when we post-docs and our wives were invited to join the Mountcastles at the Johns Hopkins University Faculty Club for lively dinners and conversation. Mountcastle was the epitome of both a serious scientist in his starched white lab coat and a distinguished Virginia gentleman outside the Medical Center.

Mountcastle was a pillar of the field of Neuroscience, but also a builder. He was the first president of the Society for Neuroscience. Its first meeting, in 1971, had about 1400 attendees; now the annual meeting attracts 30,000 neuroscientists. In 1960, he took over as editor of the *Journal of Neurophysiology*, a prestigious but flagging journal, and revitalized it into a rigorous flagship publication for neurophysiologists. He edited the major neuroscience medical textbook of the time, Medical Neurophysiology, for its 13th and 14th editions and wrote several of the chapters. The scientific rigor of this text made it required reading not only for medical students but also for graduate students and experts in the field.

He was director of the Department of Physiology from 1964 to 1980, having taken over as director from his mentor, Philip Bard. Vernon built the department into one of the premiere neuroscience centers of its time. Hopkins and NIH were the places to go for training in behaving, non-human primate studies. During my time at Hopkins, Apostolos Georgopoulos had just been appointed to the faculty, and his postdoctoral fellows were John Kalaska and Roberto Caminiti. These neuroscientists are all now leaders in the field of motor control, Apostolos at the University of Minnesota, John at the University of Montreal, and Roberto at the University of Rome. Gian Poggio was also a faculty member at that time and was renowned for his work on primary visual cortex and its role in stereopsis. Ken Johnson, a leader in somatosensory research, arrived as a new faculty member just before I left in 1981. Brad Motter stayed on at Hopkins to work with Poggio. As the neurosciences expanded at the medical school, Vernon later became a key figure in establishing a free-standing institute dedicated to neuroscience, the Zanvyl Krieger Mind/Brain Institute, which was created in 1994 at the Hopkins Homewood campus.

In the years subsequent to my time at Hopkins Vernon went on to study the attention and motion properties of neurons in the posterior parietal cortex with Michael Steinmetz, Brad Motter and Charles Duffy. He also revisited the topic of frequency discrimination in the somatosensory cortex, examining the temporal code for vibrating stimuli with Ranolfo Romo and Michael Steinmetz. Inevitably, when any of Mountcastle's students find themselves together, the "Vernon stories" flow. We who were lucky enough to have had him for a teacher can cite hundreds of examples of his rigor, intensity, and critical thinking. He prized hard work, preparation, commitment, and integrity and talked each day with us about scientific topics and personalities who shaped the field.

Mountcastle received a great deal of recognition for his lifetime of achievements. These include the Albert Lasker Award, the 'American Nobel' in 1983, the National Medal of Science from President Ronald Reagan in 1986, and the National Academy of Sciences Award in the Neurosciences in 1998. He became a University Professor at Hopkins, a rare honor bestowed on very few professors. In his later years, still filled with intellectual intensity, he wrote two books, "*Perceptual Neuroscience: the Cerebral Cortex*", published in 1995, and "*The Sensory Hand. Neural Mechanisms in Somatic Sensation*", published in 2005. These two books again demonstrate his prowess as a scholar of science. Besides Nancy, Vernon is survived by a son and a daughter, six grandchildren and two great-grandchildren.

Thus Neuroscience has lost one of its great pioneers and teachers at the age of 96. I last saw Vernon when I gave one of the annual Mountcastle Lectures in 2009 in Baltimore. He asked me "what have you been doing lately?" I was ready for the question.

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Q & A

Ron Laskey

Ron Laskey was the Charles Darwin Professor of Animal Embryology in the University of Cambridge from 1983 to 2011, and Honorary Director of the MRC Cancer Cell Unit from its start in 2001 until 2010. His research interests have centred on the control of DNA replication and the transport of proteins or RNA between cytoplasm and nucleus. Some of the DNA replication proteins he studied are in clinical trials of screening tests for several common cancers. His most highly cited work has been on the detection of radioisotopes by fluorography or intensifying screens. He is a former President of the Biochemical Society and of the British Society for Cell Biology and former Vice-President of the Academy of Medical Sciences. On a lighter note he has written and recorded albums of Songs for Cynical Scientists *and* More Songs for Cynical Scientists, *now combined as* Selected Songs for Cynical Scientists.

What drew you to biology and cell biology in particular? I was attracted to biology at 15 by two influences, curiosity about what the subject entailed and repulsion from other subjects that over-zealous teachers pressed me to take. I rebelled against this pressure and within a week of starting biology I was completely captured, thanks largely to two inspiring teachers. At university I benefited again from inspirational teachers, of whom the most influential was John Gurdon. I enjoyed his lectures so much that one morning when I overslept I decided to run to his lecture on an empty stomach. At 40 minutes I ran out of blood sugar and was carried out of the lecture feet first.

Perhaps this unfortunate event helped John to remember me when I applied to become a graduate student. For my PhD we extended John's classic nuclear transplant experiments to adult donor cells including keratinizing skin, and then continued to work together, or in close proximity, for the following 35 years. In addition to John Gurdon's influence I also benefited enormously as a postdoc in Lionel Crawford's lab at the former ICRF. Lionel had a low-key leadership style, but one that generated at least six

Fellows of the Royal Society from his students and postdocs.

I spent the following 10 years at the MRC Laboratory of Molecular Biology, rejoining John Gurdon who had moved from Oxford to Cambridge. My first week there coincided with the annual LMB lab talks, when my two heads of division Francis Crick and Sidney Brenner sat at opposite ends of the front row, shredding each speaker like twin machine-gun posts. This left an indelible impression, so when I was asked to give a talk the following year I hoped I would be hidden towards the end of the programme. However, the first speaker was Francis Crick and the second was me, so I wondered if I should draft my resignation before speaking. In reality I benefited enormously from the benevolent influence of the established scientists there, particularly Aaron Klug, Max Perutz and César Milstein. The LMB provided marvelous lessons in the importance of interactions and the benefits of an egalitarian, non-hierarchical atmosphere.

Did you ever consider an alternative career? Only very briefly. In 1965, as a twenty-year old undergraduate, I started singing in folk clubs and writing songs. To my delight audiences responded positively and I recorded songs for charities and opened a televised Christmas rally in Trafalgar Square. These minor successes were brought into sharp focus abruptly. I was invited to sing at a folk club near Amersham together with some American guy none of us had heard of. My songs were well received and I was feeling smug satisfaction as I sat down. In the next minute my career decisions clarified. His first verse included the words "I am alone, gazing through my window into the streets below, on a freshly fallen silent shroud of snow". It was Paul Simon. I joined the whole barn yelling for more until I suddenly realized that it was almost my turn to sing again following these musical masterpieces. I quickly decided that if this was the standard required to succeed as a singer/songwriter I would become a scientist instead.

What approaches would you commend to younger scientists? Above my desk I have a quotation from the French philosopher André Gide, which reads "One does not discover new lands without agreeing to lose sight of the shore for a very long time". In addition to patient persistence, I also recommend scrutinizing the results that don't make sense. Very often the biggest advances come from unexpected results, which force us to open our minds to new possibilities. This is exemplified by most of my group's work on nuclear import signals and their receptors, which we called 'importins', as well as by our work on nucleosome assembly. Ironically, the assembly factor we discovered — nucleoplasmin — turned out to have the specialized role of remodeling sperm chromatin at fertilization, but it led to the concept of the 'molecular chaperone', and thus had far greater impact than we ever expected.

Is there too much pressure towards applied science? It is important to look for opportunities to exploit the results of basic science, but it's notoriously difficult to design effective translational science projects. It is, however, perfectly feasible to look for translational opportunities whilst pursuing basic questions. Our methods for fluorography and use of intensifying screens at –70 to detect radioisotopes arose in this way. To illustrate the difficulty of anticipating opportunities for translation, I quote the extraordinary experience of my father-in-law, who developed a method for extracting penicillin from cell lysates during the Second World War. He used a metal ion and quaternary ammonium salts to precipitate the metal salt of the weak acid penicillin and this was used nationally for a few months, but then superseded. Fifty years later he was asked to write a Citation Classic paper for Current Contents. He asked why, as he thought no one had used the method for decades. However, under the declassification of secret literature it emerged that his method had been inverted and used extensively, but secretly in the 1940s to purify uranium and plutonium with a purpose far removed from his altruistic aim of purifying penicillin.

How important should teaching be in evaluating scientific careers? In the United Kingdom, I feel we systematically underestimate the importance of teaching in evaluating scientific careers. We need to remember that the quality of tomorrow's researchers depends on the quality of today's teachers. Without a high standard of university teaching we cannot expect to sustain a high standard of academic research.

Do you regret retiring and closing your lab when you did? I planned to close my laboratory at retirement age so that I could pass on the torches to members of my lab while they were still flaming brightly. This has allowed successful continuation of our work on selective export of specific mRNAs from the nucleus, but I regret that none of my former lab members could pursue the role of geminin in stem-cell specification. Our published work strongly predicts that co-expression of geminin with other embryonic stem cell factors should increase the efficiency of iPS cell formation and this still deserves to be tested. My only other regret is that our collaborative work on cancer screening and diagnosis using antibodies against MCM proteins has not been fully exploited yet. Many independent studies have confirmed that anti-MCM antibodies have advantages over other screening markers because they persist in exfoliated tumour cells for longer, so I still hope to see them used widely in clinical practice. Nevertheless, looking back my overwhelming feeling is certainly not one of regret, but one of enormous enjoyment of the excitement and fun of research in cell biology.

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